

Title (en)  
HEAT PUMP DEVICE

Title (de)  
WÄRMEPUMPENVORRICHTUNG

Title (fr)  
POMPE À CHALEUR

Publication  
**EP 2458305 B1 20190612 (EN)**

Application  
**EP 10802094 A 20100115**

Priority  
• JP 2009170698 A 20090722  
• JP 2010050421 W 20100115

Abstract (en)  
[origin: EP2458305A1] In a heat pump apparatus, it is aimed to enhance efficiency of a defrost operation by reducing a loss of heat radiation during the defrost operation and reducing a compressor input during the defrost operation. The heat pump apparatus includes a main refrigerant circuit in which a compressor 1, a first heat exchanger 3, an expansion mechanism 4, and a second heat exchanger 5 are connected sequentially, and also includes a bypass circuit 7 including an on-off valve 6 and providing a connection by bypassing the expansion mechanism 4. The main refrigerant circuit includes a four-way valve 2 that switches between a heating operation and the defrost operation by switching an order in which the refrigerant circulates through the main refrigerant circuit. The main refrigerant circuit also includes a first temperature detection unit 10 and a second temperature detection unit 11. Based on values detected by these temperature detection units, a degree of superheat of the first heat exchanger 3 during the defrost operation is computed. When the heating operation is switched to the defrost operation, the heat pump apparatus increases a circulation amount of the refrigerant circulating through the refrigerant circuit by opening the on-off valve 6, and also controls an operation frequency of the compressor 1 such that the degree of superheat is at a predetermined target value.

IPC 8 full level  
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CPC (source: EP US)  
**F25B 47/025** (2013.01 - EP US); **F25B 49/02** (2013.01 - EP US); **F25B 13/00** (2013.01 - EP US); **F25B 2400/0411** (2013.01 - EP US); **F25B 2600/01** (2013.01 - EP US); **F25B 2600/021** (2013.01 - EP US); **F25B 2600/2501** (2013.01 - EP US); **F25B 2600/2513** (2013.01 - EP US); **F25B 2600/2521** (2013.01 - EP US); **F25B 2700/21151** (2013.01 - EP US); **F25B 2700/21163** (2013.01 - EP US); **Y02B 30/70** (2013.01 - EP US)

Citation (examination)  
DE 19832682 A1 20000127 - STIEBEL ELTRON GMBH & CO KG [DE]

Cited by  
CN106500256A; EP3267130A4; EP3252397A4; EP3021053A4; EP3343133A4; US10197317B2; US10563894B2

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